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Efetividade de tecnologia educacional para prevenção de quedas em ambiente hospitalar

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Original Article

Effectiveness of educational technology for preventing falls in a hospital environment

Efetividade de tecnologia educacional para prevenção de quedas em ambiente hospitalar

Efectividad de tecnología educativa para la prevención de caídas en el ambiente hospitalario

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Abstract

Objective: To evaluate the effectiveness of an educational intervention mediated by printed technology on knowledge about fall prevention in hospitalized patients.

Method: This is a quasi-experimental study, of before and after type, applied an educational intervention mediated by a booklet. The study included 86 patients hospitalized in a medical-surgical clinic. A knowledge test on fall prevention was used, containing 12 questions, which was previously validated by professionals with expertise in patient safety. McNemar test was applied to assess, in a paired fashion, test responses before and after the educational intervention.

Results: It was observed that, before the intervention, all questions of the instrument had less success. There was an association between change in knowledge with: perception of causes of falls during hospitalization (p=0.008); events considered as fall (p=0.000); use of means to support mobility (p=0.000); difficulty in seeing and hearing as a risk factor (p=0.000); the use of medications (p=0.000); importance of informing the professional about the history of falls (p=0.007); general prevention practices (p=0.000); care related to the environment (p=0.000) and the practice of exercises during hospitalization (p=0.000).

Conclusion: Educational intervention using the booklet was effective in providing guidance on the risk of falls in hospitalized adult patients.

Resumo

Objetivo: Avaliar a efetividade de intervenção educativa mediada por tecnologia impressa no conhecimento sobre prevenção de quedas em pacientes hospitalizados.

Método: Estudo quase-experimental, do tipo antes e depois, aplicou uma intervenção educativa mediada por cartilha. O estudo incluiu 86 pacientes hospitalizados em clínica médica-cirúrgica. Utilizou-se teste de conhecimento sobre prevenção de quedas contendo 12 questões, o qual, foi previamente validado por profissionais com expertise em segurança do paciente. O teste de McNemar foi aplicado, para avaliar de forma pareada, as respostas do teste antes e após a intervenção educativa.

Resultados: Observou-se que, antes da intervenção, todas as questões do instrumento tiveram menos acertos. Houve associação entre mudança de conhecimento com: percepção sobre causas de quedas durante a internação (p=0,008); eventos considerados como queda (p=0,000); utilização de meios de apoio à mobilidade (p=0,000); dificuldade de visão e audição como fator de risco (p=0,000); o uso de medicamentos (p=0,000); importância de informar o profissional sobre o histórico de quedas (p=0,007); práticas gerais de prevenção (p=0,000); cuidados relacionados ao ambiente (p=0,000) e a prática de exercícios durante a hospitalização (p=0,000).

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Conflicts of interest: nothing to declare.

Conclusão: A intervenção educativa com uso da cartilha foi efetiva quanto a orientação sobre riscos de quedas em pacientes adultos hospitalizados.

Resumen

Objetivo: Evaluar la efectividad de una intervención educativa mediada por tecnología impresa sobre os conocimientos en prevención de caídas de pacientes hospitalizados.

Método: Estudio cuasi experimental, tipo antes y después, donde se aplicó una intervención educativa mediante una cartilla. El estudio incluyó 86 pacientes hospitalizados en una clínica médica quirúrgica. Se utilizó una prueba de conocimientos sobre prevención de caídas con 12 preguntas, que fue previamente validada por profesionales especialistas en la seguridad del paciente. Se aplicó la prueba de McNemar para evaluar de forma controlada las respuestas de la prueba antes y después de la intervención educativa.

Resultados: Se observó que, antes de la intervención, todas las respuestas del instrumento tuvieron menos aciertos. Se encontró una relación entre cambios de conocimientos y la percepción sobre causas de caídas durante la internación (p=0,008), los eventos considerados como caída (p=0,000), la utilización de medios de apoyo a la movilidad (p=0,000), las dificultades de visión y audición como factor de riesgo (p=0,000), el uso de medicamentos (p=0,000), la importancia de informar al profesional sobre el historial de caídas (p=0,007), las prácticas generales de prevención (p=0,000), los cuidados relacionados con el ambiente (p=0,000) y la práctica de ejercicios durante la hospitalización (p=0,000).

Conclusión: La intervención educativa con uso de la cartilla fue efectiva respecto a las instrucciones sobre riesgos de caídas en pacientes adultos hospitalizados.

Introduction

In-hospital falls are a highly prevalent problem in patient safety and represent an indicator of quality in healthcare.[1] Data from the Brazilian National Health Regulatory Agency (ANVISA – *Agência Nacional de Vigilância Sanitária*) reveal that from January to December 2017, 8,484 falls were reported in the hospital environment, and of these, 5.93% resulted in death.[2] Falls have negative repercussions, such as abrasions, injuries, fractures and even death, compromising service quality indicators, increasing length of stay and hospital costs.[3] Therefore, it is important that interventions that prevent falls are implemented, as well as their monitoring, investigation, patient and family education.[4]

To support falls prevention actions, it is essential to establish an approach based on promotion of patients' health in order to favor their safety during their stay in the hospital. Health education as a health-promoting strategy provides improvements in knowledge about the risks of falls, which can positively impact patient adherence to prevention guidelines.[5]

It is noteworthy that health promotion is characterized by individuals' training to avoid conditioning factors and determinants of diseases. In the hospital environment, this concept is reaffirmed by the Declaration of Budapest, which emphasizes the importance of the active role of patients in tertiary care services and the improvement of the supply and quality of information, communication and health education programs.[5] Therefore, to achieve the quality of care proposed by the Budapest Declaration, it is pertinent that the nursing team develop specific skills in the care process, favoring quality healthcare.

These competencies are described in the Galway Consensus, namely: effective engagement in health promotion and health education practices as a catalysing change, leadership, assessment, planning, implementation, evaluation, advocacy and partnerships.[6] With regard to education and health promotion practices, nursing can use technologies such as videos, games, applications and printed materials such as booklets, as they are accessible, low cost and suitable for use in a variety of care settings, including the hospital. They represent viable tools to strengthen self-care and contribute to making learning a more collaborative experience.[7-10]

The educational intervention using a booklet is supported by the Galway Consensus competencies such as planning, implementation, assessment and advocacy, allowing patients to become active in consolidating the competency catalysing change.[6] Thus, the use of printed educational technology as a tool for health education on fall prevention during hospitalization makes the educational moment more dynamic, attractive and able to draw patients' attention to moments of discussion, solving doubts, recognizing risks and setting goals.[10] However, there are gaps in knowledge about the effectiveness of booklets aimed at hospitalized patients. Searching the scientific literature, it was observed that educational technologies for preventing falls are mainly focused on the outpatient and home-based approach.[7,8,11]

Thus, this study becomes relevant for providing evidence on the effectiveness of an educational tool printed in the care of hospitalized patients. Based on the results of this study, the booklet can become a teaching instrument to be used in educational interventions on fall prevention in several hospital institutions in Brazil.

Thus, it is expected that the results will collaborate in coping with adverse events that occur in hospital institutions, in addition to providing subsidies to healthcare professionals, researchers and policy makers on the benefits of health education actions for the prevention of mediated falls by educational technologies. Furthermore, by evaluating the effectiveness of these tools, it is possible to strengthen the role of nurses as educators and their skills in health promotion and health education strategies. For patients, the use of printed materials can improve understanding and adherence to practices for preventing falls during hospitalization.

Thus, this study aims to assess the effectiveness of an educational intervention mediated by printed technology on knowledge about fall prevention in hospitalized patients.

Methods

This is a quasi-experimental study of before and after type.

The study setting was the medical-surgical clinic of a trauma referral hospital, located in northern Brazil, Ceará State, from August to November 2019.

The target population consisted of patients aged 18 years or older, admitted to the medical-surgical clinic of that institution during the data collection period. As inclusion criteria were considered: being hospitalized in the medical clinic under study; being literate and obtaining minimum scores on the Mini Mental State Examination (MMSE), the cut-off points were considered: 21 for those with education between one and three years, 24 for individuals between four and seven years of formal education, and 26 for people with more than eight years of education.[12]

The MMSE was used with the intention of certifying that all included patients had preserved cognition and were able to understand the printed educational technology, as well as answer the questions of the knowledge test about falls. Patients with hemodynamic instability were excluded, which could compromise their participation in the interview.

Sampling was done by convenience and in a non-probabilistic way during the months of data collection, resulting in 86 patients.

For data collection, an instrument for sociodemographic characterization and a knowledge test on fall prevention were used, which was submitted to the judges' analysis. Three nurse researchers were invited to verify the instrument's clarity and relevance in assessing patients' knowledge about fall prevention.

The selection of the three judges was made by consulting resumes from the Lattes platform (CNPq) and by the researchers' recommendation, based on the bibliographic production and the professional's expertise on the topic of interest. It is recommended that, at this moment of instrument validation, an odd number of experts is used, as well as at least three, to assess the items regarding equivalence and agreement of responses.[13]

Judges' qualifications were: Judge 1 – Nurse, PhD in Nursing and researcher in the area of health education, educational technologies and patient safety; Judge 2 – Nurse, PhD in Nursing and researcher in the area of health promotion and patient safety; Judge 3 – Nurse, Doctor of Nursing, researcher in the area of health education and educational technologies.

The instrument was adapted from another previously published,[14] which was sent via email to the judges along with a term of interest in participating in the research and an evaluation form. The criteria that the judges used to assess the questions were clarity and relevance, presented in a Likert-type scale. Next to each question there was space to include possible suggestions. Content Validity Coefficient (CVC) was considered acceptable for the questions that reached the minimum value of 0.7.[14]

All 12 questions obtained CVC above 0.88 in relation to clarity and relevance. As for qualitative

observations, the following were performed: language adequacy, substitution of complex words for others more understandable to patients, inclusion of true and false statements in order to avoid response bias and reduction in the size of statements. All suggestions proposed by the judges were accepted so that the instrument could be used in the research.

Thus, the final version of the data collection instrument contained sociodemographic profile variables such as sex, age, occupation, marital status, presence of children, religion, education and origin, in addition to the 12 questions of the knowledge test about preventing falls in the hospital environment.

Data collection was performed by a team of four researchers, consisting of a doctor in nursing and three nursing students from the 10th semester, who were previously trained to carry out the educational intervention in a standardized way with all patients. During the collection period, the team alternated from Monday to Friday, in the morning and afternoon shifts. Upon arriving at the medical-surgical clinic, the researcher presented herself to the nurse on duty, asked for the list of hospitalized patients and assessed which ones had a stable clinical condition to participate in the research.

After this initial screening, the researchers went to the wards, introduced themselves to patients and informed the research objectives. Upon expressing interest in participating, literacy was verified and the application of MMSE was carried out. Upon obtaining the minimum score required, the signing of the Informed Consent Form was requested, after written confirmation, an instrument of sociodemographic characterization was applied and then the assessment of knowledge before the educational intervention, through the knowledge test, which has been described previously and was applied both in the pre- and post-test.

After completing the pre-test, the educational intervention took place, in a standardized way, with an average duration of 15 minutes in each patient. This process took place in the ward environment, with patients accommodated in their bed and the researcher in a chair at the bedside.

Initially, the researcher introduced the theme, addressing questions about the magnitude of the problem and the importance of preventing falls. Subsequently, the booklet "Be careful not to fall for this" was made available, printed on A4 colored paper, for individual reading.

The content includes the following topics: "Risk situations" (presents the definition and characterization of falls); "Factors associated with falls" (includes extrinsic and intrinsic risks); "How to avoid complications" (addresses prevention measures for patients and companion); "Safe environment" (it has tips to keep the ward's environment safer); "Exercises are good" (exercise guidelines for strengthening the muscles); "Super team" (presents attributions of a nursing team, focused on fall prevention, and the conducts in face of a fall situation); "Seven errors game" (lists risk factors present in the hospital environment). The technology was built and validated by healthcare professionals and evaluated by the target audience as understandable (CVI=0.98).[10]

While the patient performed the reading, the researcher remained at the bedside to monitor the entire process and provide any clarifications in case of doubts. It is noteworthy that no time was stipulated to complete the reading, in order to avoid external pressures and compromise the learning process.

With the completion of the reading, the researcher asked about comprehension difficulties or any question about the topic, in order to solve them, and then performed the immediate post-test. This procedure was used in similar studies, with the application of printed technologies, such as booklets[15] and audiovisual, such as videos.[16]

The collected data were typed and analyzed according to the established times and compiled in Excel. Later, the IBM SPSS Statistics version 24 software was used. The adopted significance level was 5% and confidence interval was 95%. To assess the normality of continuous data and define the choice of test (parametric or non-parametric) the Kolmogorov-Smirnov test was used.

The answers to the knowledge test were dichotomized between right and wrong. To compare the

distribution of correct answers before and after the educational intervention, McNemar' non-parametric test was applied, which allows analyzing the proportions between dichotomous variables in a paired fashion.

This study was conducted in accordance with Resolution 466/2012 and was approved by the Institutional Review Board of *Universidade Estadual do Vale do Acaraú* (Opinion 3.377.430/2018) (CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 94705218.0.0000.5053). All participants signed the Informed Consent Form.

Results

The study included 86 adult patients hospitalized in the medical-surgical clinic. Table 1 presents the sociodemographic characteristics found.

Table 1. Description of sociodemographic characteristics of patients

Variables	n(%)
Sex	
Female	24(27.9)
Male	62(72.1)
Age	
18 to 24	35(40.7)
25 to 39	29(33.7)
40 to 59	19(22.1)
60 and older	3(3.5)
Occupation	
Active	69(80.2)
Inactive	17(19.8)
Marital status	
Married	33(38.4)
Single	53(61.6)
Children	
Yes	46(53.5)
No	40(46.5)
Religion	
Atheism	15(17.4)
Catholicism	55(64.0)
Evangelism	16(18.6)
Education (years of study)	
0 - 8	29(33.7)
9 - 11	46(53.5)
≥12	11(12.8)
Origin	
Sobral	23 (26.7)
Macro-region	63 (73.3)

Most participants were male (62; 72.1%), young adults aged between 18 and 24 years, with a mean age of 30 years (±12 years), economically active (69; 80, 2%), single (53; 61.6%) and with children (46; 53.5%). The predominant religion was Catholicism (55; 64.0%) and most had 9 to 11 years of education (46; 53.5%). Patients from the macro-region of Sobral prevailed (63; 73.3%) because the teaching hospital is a reference in trauma for the entire northern region of Ceará State.

Many patients were in continuous use of intravenous medication (66; 76.7%). Only 30.2% (26) had comorbidities, especially chronic insomnia (9; 34.6%), hypertension (6; 20.6%), Diabetes Mellitus (4;15.3%) and Depression (4; 15.3%).

The clinical profile shows a predominance of low risk for falls (42; 48.8%), followed by medium risk (31; 3.0%) and high risk (13; 15.0%), according to the Morse Fall Scale classification. The degree of dependence to perform activities of daily living was measured using the Katz scale, which showed independence in 43 (50.0%) patients, partial dependence in 31 (36.0%) and total dependence in 12 (14.0 %). It is noteworthy that no participants reported a previous history of falls.

Table 2 presents the results of the knowledge test before and after the educational intervention mediated by the booklet.

It was observed that the number of correct answers was lower before the educational intervention in all questions. Those that obtained the best statistical significance were related to the causes of falls during hospitalization (p=0.008); which events are considered as falling (p=0.000); the use of means to support mobility (p=0.000); difficulty in seeing and hearing as a risk factor (p=0.000); the use of medications (p=0.000); importance of warning about the history of falls (p=0.007); general prevention practices (p=0.000); prevention related to the environment (p=0.000) and the practice of exercises during hospitalization (p=0.000). The questions about the elderly and children as risk groups, structural risk factors and increase in hospitalization days due to complications from falls did not obtain statistical differences, since the frequencies remained similar in both moments.

Table 2. Comparison of correct answers before and after the questions in the knowledge test about preventing falls

Questions	Hits before n(%)	Hits after n(%)	p-value*
During hospitalization, falls may occur when patients go to the bathroom, when changing position in bed, or when walking in the hallways (True)	78(90.7)	86(100.0)	0.008
It is considered a fall when patients are found on the ground, or when they change position and need help, even if they do not fall (True)	50(58.1)	83(96.5)	0.000
The elderly and children are groups with less risk of falls (False)	77(89.5)	83(96.5)	0.146
Using crutches or wheelchairs is a risk factor for falls (True)	38(44.2)	70(81.4)	0.000
Difficulty in hearing or seeing does not contribute to causing falls in hospitalized patients (False)	68(79.1)	84(97.7)	0.000
Taking sleeping pills, severe pain, or depression can increase the chance of falls (True)	63(73.3)	83(96.5)	0.000
Factors such as the type of shoes, uneven floors, a non-slip bathroom floor and a bed without bars are risk conditions for falls (True)	83(96.5)	86(100.0)	0.250
Falls can cause problems for patients and increase hospitalization days (True)	81(94.2)	85(98.8)	0.125
If you have already fallen, you should not worry about telling any professional about it (False)	73(84.9)	84(97.7)	0.007
To avoid falls, it is important only to get up from bed accompanied, inform the professionals about all the medications you use and always wear your glasses (True)	69(80.2)	85(98.8)	0.000
For a safer environment, keep the lights off at night, bags and bags should be on the floor beside the stretcher and objects of constant use should not be near patients as they cause distractions (False)	62(72.1)	83(96.5)	0.000
During hospitalization you can do stretching exercises to strengthen your muscles and prevent falls (True)	71(82.6)	84(97.7)	0.000

*Mc Nemar test

Discussion

One of the limitations of the study is the exclusion of illiterate patients with cognitive deficits and mental confusion, due to the possible impediment to individual reading the booklet, as well as completing the data collection instruments. Moreover, the immediate assessment of knowledge, without longitudinal monitoring, made a medium and long-term assessment impossible, and the fact that the study was carried out only with people hospitalized in the public system, with no possibility of comparing the findings with supplementary health network users are also configured as limitations.

The results of this study made it possible to identify whether educational intervention mediated by printed technology is effective in improving knowledge about fall prevention in hospitalized patients. Thus, it provides reflections on the importance of health education strategies as a means of preventing falls in the hospital environment. Furthermore, it can support care practice by offering an effective and low-cost fall prevention tool.

Participants in this study represent a young adult population, with an average age of 30 years, male and with nine to eleven years of education. National and international researches with similar scope corroborate these findings.[17-21] It is noteworthy that the higher level of education favored the reading of the booklet and enabled a better understanding of the content and completion of the knowledge test about falls.

Morse fall scale classification revealed patients at low and moderate risk. A similar study carried out in Paraíba showed a predominance of high risk.[19] This reinforces the relevance of using instruments to predict the risk of falls, since the result may be associated with the sector and characteristics of patients.

The health education strategy used proposes that patient adherence to falls prevention can be improved when there is knowledge about risks. Moreover, it is considered that the use of educational technologies for patient health education is a way to consolidate skills for nurses in healthcare, as established in the Galway Consensus.[22]

When evaluating the results in relation to the knowledge test, it was possible to observe an increase in the percentage of correct answers for the questions when comparing the pre- and post-intervention moments ($p<0.05$) in the items on the occurrence of falls during hospitalization; events considered as falling; the use of means to support mobility; difficulty in vision and hearing as a risk factor; the use of medications; importance of informing professionals about the history of falls; general prevention practices; prevention related to the environment and exercising during hospitalization.

The perception of occurrence of falls during hospitalization obtained a satisfactory frequency of correct answers even in the pre-test. After an educational intervention, all participants revealed that they understood the existence of risks for falls in the hospital environment. This can be considered

a good result, as it suggests a greater possibility for patients to prevent falls.

The use of auxiliary devices as a risk factor for falls had the lowest number of correct answers in the pre-test. In Spain, a study with 315 hospitalized patients found that 42.7% of patients who used crutches without the help of a companion or healthcare professional were at high risk for falls, 27.7% of cases suffered falls due to loss of balance and 22.5 % for trying to perform the activity without needed assistance.[23] Therefore, knowledge of these factors by patients can contribute to the development of prevention strategies aimed at controlling mobility.[24]

Observational surveys in Asia and Latin America have shown that hearing loss can be an independent risk factor for falls in hospitalized patients.[25,26] After the educational intervention, patients understood the need to inform professionals about visual or hearing deficits upon admission in order to contribute to a specific care plan according to the client's needs.

It is worth highlighting the importance of performing anamnesis and detailed screening on the auditory function of patients upon admission, as, in this way, it is possible to effectively meet the care needs based on the degree of sensory impairment. This process also favors the signaling of individuals at greater risk of falls due to their health condition, who can benefit from the adaptation of the service, the individualized care plan and possible referrals within the multidisciplinary team.[27,28]

Improved knowledge about the association of vision and hearing deficits with falls is an important result, since falls are more frequent in individuals with lower visual and hearing acuity, as they become less able to identify and avoid obstacles.

As for the use of medications, there was an association with improved knowledge. It was observed that most participants were in continuous use of intravenous therapy, which makes them susceptible to possible side effects. Thus, during data collection, many recognized symptoms of hypotension, dizziness and weakness due to the use of medications.

In this sense, nursing professionals, as they are in close and prolonged contact with patients, are able to identify risks related to the use of specific classes of medications and provide information on adverse events associated with them. These guidance strategies strengthen patient safety during hospitalization and can reduce damage from falls.[29]

Literature review infers that the occurrence of falls in hospitalized patients was attributed to anxiolytics, hypnotics and sedatives (48%), antipsychotics (35%), opioids and antiepileptics (30%) and antidepressants (22%).[30] By recognizing the risks of falls related to certain groups of drugs, patients become active in the care process and partners in the interventions proposed by healthcare professionals.

A relevant issue addressed in the knowledge test concerns communication with professionals. A study carried out in the United States with 193 patients showed that 10% did not intend to ask for assistance when performing some behavior associated with the risk of falling.[31] Therefore, the nursing staff must make it clear to patients that they must ask for help to get out of bed, walk, go to the bathroom or get out of a chair and that this is not uncomfortable, it is an activity to maintain their safety.[21]

Although the participants do not have a history of falls, the importance of sensitizing them to communicate effectively with professionals is reinforced, considering that the data presented here reveal that the knowledge of patients on this theme can improve from the offer of health education.

There was an important relationship in patients' knowledge about complications resulting from falls after questions were addressed about the best way to get out of bed, always being accompanied and simple care with objects near the bed. These risk factors associated with falls are modifiable and avoidable. Therefore, attitudes towards health education and prevention can positively interfere and reduce the chances of falls.[11]

Regarding the practice of physical activity as a form of prevention, many patients considered that performing exercises during hospitalization could offer even greater risks for falls. However, after reading the material and clarifying doubts, they recognized the benefits of exercises for mo-

bility and muscle strengthening. In order to reinforce this practice, in the booklet, stretching exercises are recommended that can be performed in patients' own bed.

A literature review that analyzed clinical guidelines, systematic reviews, meta-analyses and randomized clinical trials showed that exercise programs to prevent falls not only reduce rates of falls, but avoid injuries resulting from them. Many risk factors are correctable by well-designed exercise programs such as balance training and stretching. Thus, they should be recommended to hospitalized patients because they are effective in reducing the number and risk of falls.[32]

The results of this study show that, after an educational intervention mediated by the booklet, all items of the knowledge test had a frequency of correct answers higher than 80%. Consolidating this result, a prospective cohort survey in the United States found that educational interventions on falls were associated with satisfactory knowledge assessment in the post-test and had a direct relationship with a 22% reduction in hospital drop rates. Similarly, the use of these interventions reduced ($p<0.001$) the risk of injuries due to factors associated with mobility, bathroom use and impaired cognition.[33]

These results are related to the competency to catalyze change, defined as the possibility of modifying behaviors, as well as empowering the individual with a view to improving health.[34]

In view of this evidence, it can be seen that the educational intervention using the booklet was responsible for the significant increase in the level of knowledge of patients about risks of falls, of which many are exposed during hospitalization. It is considered that the use of booklet as health technology is a valid tool for health promotion and facilitator of the educational process in health, which offers contributions to the knowledge of patients, family or professionals.[35]

The results of this study strengthen the importance of nurses' role as health educators and the need for the use of educational technologies that facilitate the apprehension of knowledge by the target population. Thus, it is believed that the educational booklet is effective to be used in the educational moments to be performed in the hospital environment and that it may contribute to the empowerment of individuals about the risks associated with falls. It is also noteworthy that, in the context of the COVID-19 pandemic, the use of the booklet as a self-teaching tool should be encouraged considering that patients can read individually and learn about fall prevention without requiring the presence of a nurse at this time.

The innovative nature of this study is also reinforced considering the scarcity of evidence on the use of educational teaching materials aimed at hospitalized adult patients on fall prevention. Thus, it is suggested new studies with continuity of follow-up of the intervention and its implications in reducing the occurrence of falls in healthcare services. It is essential to conduct studies with educational interventions mediated by technologies that overcome the difficulty of written communication, considering the presence of illiterate patients with low education.

Conclusion

Educational intervention using the booklet was effective in guiding the risks of falls in hospitalized adult patients. Thus, this material can contribute to the promotion of a safe hospital environment for patients and their companion, as well as the improvement of the quality of nursing care. Furthermore, it is aligned with the principles of health promotion, such as autonomy and self-care.

Collaborations

Ximenes MAM contributed to the project design, data collection and interpretation, writing of the article and approval of the final version to be published. Brandão MGSA, Macêdo TS, Costa MMF and Galindo-Neto NM contributed to the writing of the article and approval of the final version to be published. Caetano JÁ and Oriá MOB contributed to the critical review of the content of the

article and approval of the final version to be published. Barros LM contributed to the design of the project, writing the article, critical review of the content of the article and approval of the final version to be published.

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